REPORT DOCUMENTATION PAGE

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Fine sediments in suspension over continental shelves (continuation of N00014-89-J-1067)

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6. AUTHOR(S)
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11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The work funded by this grant addressed the dynamics of the bottom boundary layer and the associated transport of fine sediment on storm-dominated continental shelves. The grant was a continuation of previous grants that covered the same topics, and it was part of the Sediment Transport Events on Shelves and Slopes (STRESS) program, which contained a substantial field component off northern California. The work on sediment transport focused on a comparison of the thickness of the bottom mixed layer (BML) and the bottom nepheloid layer (BNL), and it indicated a different structure depending on whether the along-isobath flow is upwelling-favorable or downwelling-favorable. The work on the dynamics of the bottom boundary layer focused on observational tests of vertically integrated balances for heat and momentum.

14. SUBJECT TERMS			15. NUMBER OF PAGES: 1
			16. PRICE CODE
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Standard Form 298 Back (Rev. 2-89)

Final Report - N00014-94-1-0296

Fine sediments in suspension over continental shelves (continuation of N00014-89-J-1067)

The work funded by this grant focused on the dynamics of the bottom boundary layer and the associated transport of fine sediment on storm-dominated continental shelves. The grant was a continuation of previous grants that covered the same topics, and it was part of the Sediment Transport Events on Shelves and Slopes (STRESS) program, which contained a substantial field component off northern California.

The work on sediment transport focused on analysis of shipboard profile measurements of temperature, conductivity and optical transmission (a surrogate for sediment concentration), and on analysis of time-series observations of current velocity and optical transmission between 0.3 and 30 m above bottom. The primary result of this work was a comparison of thicknesses of the bottom mixed layer (BML) and the bottom nepheloid layer (BNL), which resulted in a conceptual model with different behavior depending on whether the along-isobath flow is upwelling-favorable or downwelling-favorable. This work is summarized by J. H. Trowbridge, B. Butman, and R. Limeburner (Characteristics of the suspended sediment field over the northern California continental shelf based on measurements of optical attenuation during STRESS and SMILE, Cont. Shelf Res. 14, 1257-1270, 1994).

The work on the dynamics of the bottom boundary layer focused on testing a set of balances, integrated over the thickness of the bottom boundary layer, for along-isobath momentum, cross-isobath momentum, and heat. The observational test was based on time-series measurements of current velocity and temperature, between 0.3 and 30 m above bottom, that were obtained during the STRESS program. The primary new feature of the balances is a cross-isobath buoyancy force resulting from distortion of the isopycnal surfaces within the bottom boundary layer by mixing and advection. The analysis confirmed the importance of this force in observations, and indicated only moderate success of the along-isobath momentum balance and the heat balance. This work is summarized by J. H. Trowbridge and S. J. Lentz (Dynamics of the bottom boundary layer on the northern California shelf, J. Phys. Oceanogr., submitted).